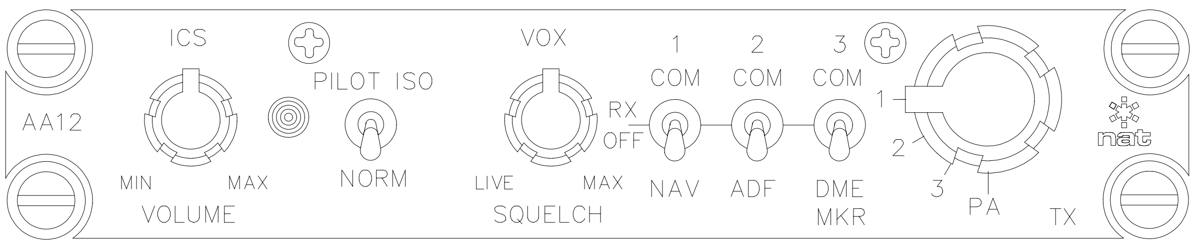
SM21

AA12
Compact Audio Controller



INSTALLATION AND OPERATION MANUAL

REV 4.10 September 9, 2004

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Periodically NAT will release manual amendments. In order to maintain the most accurate and up to date manual these amendments should be carried out immediately upon receipt and recorded on the following amendment record.

AMENDMENT RECORD

Amendment Number	Amendment Date	Section(s) Changed	Date Entered	Entered By

Insert any Amendment Instruction sheets after this page.

ENG-FORM: 820-0109.DOT

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Section 1 Description

1.1 Introduction

This manual contains information on the AA12 Compact Audio Controller. All derivative products will be covered by manual supplements, which can be obtained from NAT as required.

Information in this section consists of purpose of equipment, features and specifications.

1.2 Purpose of Equipment

The AA12 is a compact audio controller that provides full boom microphone (MIC) support and high performance audio for up to six crew positions with VOX, LIVE and KEYED ICS capability. Boom MIC control is provided for pilot and copilot transmit capability, with the pilot retaining priority. Muting of the entertainment and/or intercom audio is accomplished during the various operational modes, providing improved intelligibility of the audio delivered to the user.

The very small size and extensive radio and intercom functions make this an excellent choice for many installations. The AA12 is intended for use in situations where radio selection, audio performance and size are all critical elements.

The audio characteristics of the AA12 are derived directly from the AA80 family, and the AA12 delivers the same reliable performance. The compact ‘radio select’ functions provide all the necessary capability for most general aviation and light commercial operations, with up to four transceivers and four receivers (depending on model).

1.3 Features

The AA12 system employs NAT's unique audio processing, which reduces noise and tailors the frequency response to produce clean, crisp audio under difficult conditions. This results in better on-board communication and greatly reduced noise fatigue for the pilot.

Two crew positions have full TX/RX/ICS capability and four are RX/ICS only. PILOT ISO operation is provided, along with fail passive switching for the Pilot. Front panel annunciation provides indication of TX and ICS operations. A fully illuminated front panel is provided for low light operations.

Over voltage and reverse voltage protection circuits ensure operability in severe aircraft environments.

The AA12 features NAT's ICS TIE LINE, allowing it to be connected to any other NAT audio product with the same feature, and a MUSIC input, with the music muted by TX, RX or ICS activity.

Internal control is provided for radio receive level, artificial transmit sidetone level, music level, and ATC mute level. Intercom level and VOX squelch are adjustable from the front panel.

ICS operation allows transmit during any ICS mode simply by use of any TX PTT switch.

The different models of the unit permit variations of the front panel labeling of the inputs/outputs, and the option of either Dzus or tray mounting.

1.4 Specifications

1.4.1 Electrical Specifications

Input Power:		14 or 28 Vdc nominal
Supply Current:		250 mA (max)
Lighting Current:		60 mA @ 28 Vdc typical 120 mA @ 14 Vdc typical
Headset Power:		60 mW typical/150 Ω Headset Total output power 320 mW typical.
Indicators:		Bi-color LED: Green = Transmit Orange = Intercom
Controls:	Front panel:	ICS Volume VOX Threshold ISO/NORM Mode Select RX Audio Select TX Select
	Internal:	ATC Muting Sidetone (Artificial) RX Volume Music Level

Inputs:	6 Standard HI Z MICs (250 mVrms for full output) 1 Music (3 Vp-p, 600 Ω input Z) 7 Radio (2.5 Vrms, 1 kΩ input Z) 1 ICS Key (ground seeking) 1 ICS Tie Line (ICS expansion) 2 TX Keys (ground seeking) 1 Direct Audio
Outputs:	6 HI Z Headsets (150–600 Ω) 4 Transmitter MIC/Key/Lo

1.4.2 Physical Specifications

Height:	1.1” (28.5 mm)
Length:	5.8” (146.1 mm) behind panel
Width:	5.8” (146.1 mm) in front of panel 4.9” (124.5 mm) behind panel
Weight:	1.0 lb (450 g)
Mounting:	AA12 - Panel mount, Dzus fasteners (4) AA12T - Tray Mount

1.4.3 Environmental Specifications

Operating Temperature:	-40 °C to +70 °C
Storage Temperature:	-55 °C to +85 °C
Altitude:	25,000’
Humidity:	95% Non-condensing

1.5 Unit Nomenclature

The models covered by this manual are the base units from which all other models are derived. For details of other available models, please contact NAT.

Model	Description
AA12-001	COM1, COM2, COM3 Transceivers + PA NAV, ADF and DME/MKR switches 28 Vdc Blue-white lights Supports standard NAT ICS Tie Line ICS Volume and VOX Squelch controls Dzus mount
AA12-002	COM1, COM2, COM3 Transceivers + PA 4 unswitched inputs 28 Vdc Blue-white lights Supports standard NAT ICS Tie Line ICS Volume and VOX Squelch controls Dzus mount
AA12T-002	COM, FM, AUX Transceivers + PA 28 Vdc Blue-white lights Supports standard NAT ICS Tie Line ICS Volume and VOX Squelch controls Tray mount

End of section 1

Section 2 Installation

2.1 Introduction

Information in this section consists of: unpacking and inspection procedures, installation procedures, post-installation checks, and installation drawings.

2.2 Unpacking and Inspection

Unpack the equipment carefully and locate the warranty card. Inspect the unit visually for damage due to shipping and report all such claims immediately to the carrier involved. Note that each unit should have the following:

- AA12 Compact Audio Controller
- Operator's Manual
- Warranty Card
- Release certification

Verify that all items are present before proceeding and report any shortage immediately to your supplier.

2.2.1 Warranty

Complete the warranty card information and send it to NAT when the installation is complete. If you fail to complete the warranty card, the warranty is effective from the date of shipment from NAT.

Note: An appropriately rated facility, e.g. Certified Aircraft Repair Station, must install this equipment in accordance with applicable regulations. NAT Ltd's warranty is not valid unless an authorized NAT Dealer installs the equipment. Failure to follow any of the installation instructions, or installation by a non-certified individual or agency will void the warranty, and may result in a non-airworthy installation.

2.3 Installation Procedures

2.3.1 Warnings

Do not bundle ***any lines from this unit*** with transmitter coax lines. Do not bundle any audio or DC power lines from this unit with 400 Hz synchro wiring or AC power lines. Do not position this unit next to any device with a strong alternating magnetic field such as an inverter, motor or blower, or significant audio interference will result.

2.3.2 Cautions

In all installations, use shielded cable exactly as shown and ***ground as indicated***. Significant problems could result from not following these guidelines.

Shield and route the microphone (MIC) and ICS tie lines used in the AA12 installation appropriately. Not doing this can result in poor performance of the aircraft audio system.

The operation of the VOX intercom can be severely degraded by mixing different manufacturer's microphones in the aircraft intercom system. NAT recommends that all microphones be identical for optimum performance of the ICS VOX intercom

All audio installations can be seriously degraded by incorrect wiring and shielding, and may result in abnormal cross-talk, hum and ground-loop noise. Be especially careful with all MIC wiring and Tie Line wiring, as these lines carry the lowest level signals in the aircraft.

All MIC and headset jacks should be electrically isolated from the airframe or significant ground loop noise may result.

2.3.3 Notes

Audio performance can be impaired by the introduction of airframe electrical noise at the headset jack locations. For best results, all headset jacks should be fully isolated from the airframe.

2.3.4 Cabling and Wiring

All unshielded wire should be MIL-W-22759 or equivalent. For shielded wire applications, use Tefzel MIL-C-27500 or Mil-M81044 single conductor and shielded wire with solder sleeves (for shield terminations) to make the most compact and easily terminated interconnect. Follow the wiring diagrams in Section 2.4 as required.

Allow 3 inches from the end of the wire to the shield termination to allow the hood to be easily installed. Note that the hood is a “clamshell” hood, and is installed after the wiring is complete.

All wiring should be at least 22 AWG except power and ground lines which should be at least 20 AWG. Ensure that all ground connections are clean and well secured.

2.3.5 Mechanical Mounting

For the standard AA12 units, mounting is accomplished in a standard Dzus rack or rail assembly with a clearance opening of 5 inches, a full width dimension of 5.75 inches, and a total of 1.125 inches of rail height. Verify that adequate rear cable clearance is left when planning console installations.

The AA12T variants are tray-mounted units. The required cutout dimensions are given on drawing AA12T\IKC\922-0 at the end of this section.

2.3.6 Post-Installation Checks

If any preset requires adjustment, be sure this is carried out before the aircraft leaves, and that the unit and its mating connector are secured before departure. Make all required log book entries, electrical load, weight and balance amendments and other paperwork as required by your local regulatory agency.

2.3.6.1 Voltage/resistance checks

Check the following:

Do not attach the AA12 until the following conditions are met:

P101, pin **<1>** for +14/28 Vdc relative to ground.

P101, pin **<14>** for continuity to ground (less than 0.5 Ω).

P102, pin **<5>** for +14/28 Vdc Lights relative to ground.

P102, pin **<17>** for continuity to ground (less than 0.5 Ω).

Review the installation and perform continuity checks from the AA12 to the applicable source/destination connections that are interfaced to the unit.

2.3.6.2 Power On checks

Check the following:

Install the AA12 and power up the systems.

Turn on the Audio Controller.

Verify normal operation of all intercom and radio functions, including NORMAL and ISO operations from the pilot position. For more information refer to Section 3.0 for specific operation details.

2.3.7 Adjustments

The unit is shipped from the factory with all internal adjustments set to the normal test levels. Once installed in the aircraft, it may be desirable to change some of these settings to best suit the local operating environment. The internal adjustments that can be varied are located along the left side of the unit and are as follows:

ATC Adjusts the trigger point for music muting from an incoming radio source. Fully CCW will disable the music input. Fully CW will disable the ATC MUTE capability for the music.

S/T Adjusts level of *internally generated artificial sidetone*. Should be used only if sidetone is not produced by existing radios. Normally set to OFF (fully CCW).

RX Adjusts level of *receive* audio from radio equipment. Should be balanced for adequate level in both InterVOX and PIL ISO modes of operation, when monitored from the pilot position.

MUSIC Adjusts level of external music source (Walkman, etc.). Typically set to mid range.

Upon satisfactory completion of all performance checks, make the required log entries and complete the necessary Regulatory Agency paperwork before releasing the aircraft for service.

2.4 Continued Airworthiness

Maintenance of the AA12 is ‘on condition’ only. Periodic maintenance of this product is not required.

2.5 Accessories Required But Not Supplied

Installation kit p/n **D25P25SL-IKC** is required to complete the installation. The kit consists of one **D25SL-IKC** 25-pin D-min Female Crimp Kit, and one **D25PL-IKC** 25-pin D-min Male Crimp Kit. These consist of the following:

<u>D25SL-IKC</u>

Quantity	Description	NAT Part #
1	D-min 25 Socket Housing	20-21-025
25	MS Crimp Socket	20-26-901
1*	Jack Screw Set	20-27-002
1*	Lock Clip Set	20-27-004
1	25 Pin Connector Hood	20-29-026

D25PL-IKC

Quantity	Description	NAT Part #
1	D-min 25 Pin Housing	20-11-025
25	MS Crimp Pin	20-26-891
1*	Jack Screw Set	20-27-002
1*	Lock Clip Set	20-27-004
1	25 Pin Connector Hood	20-29-026

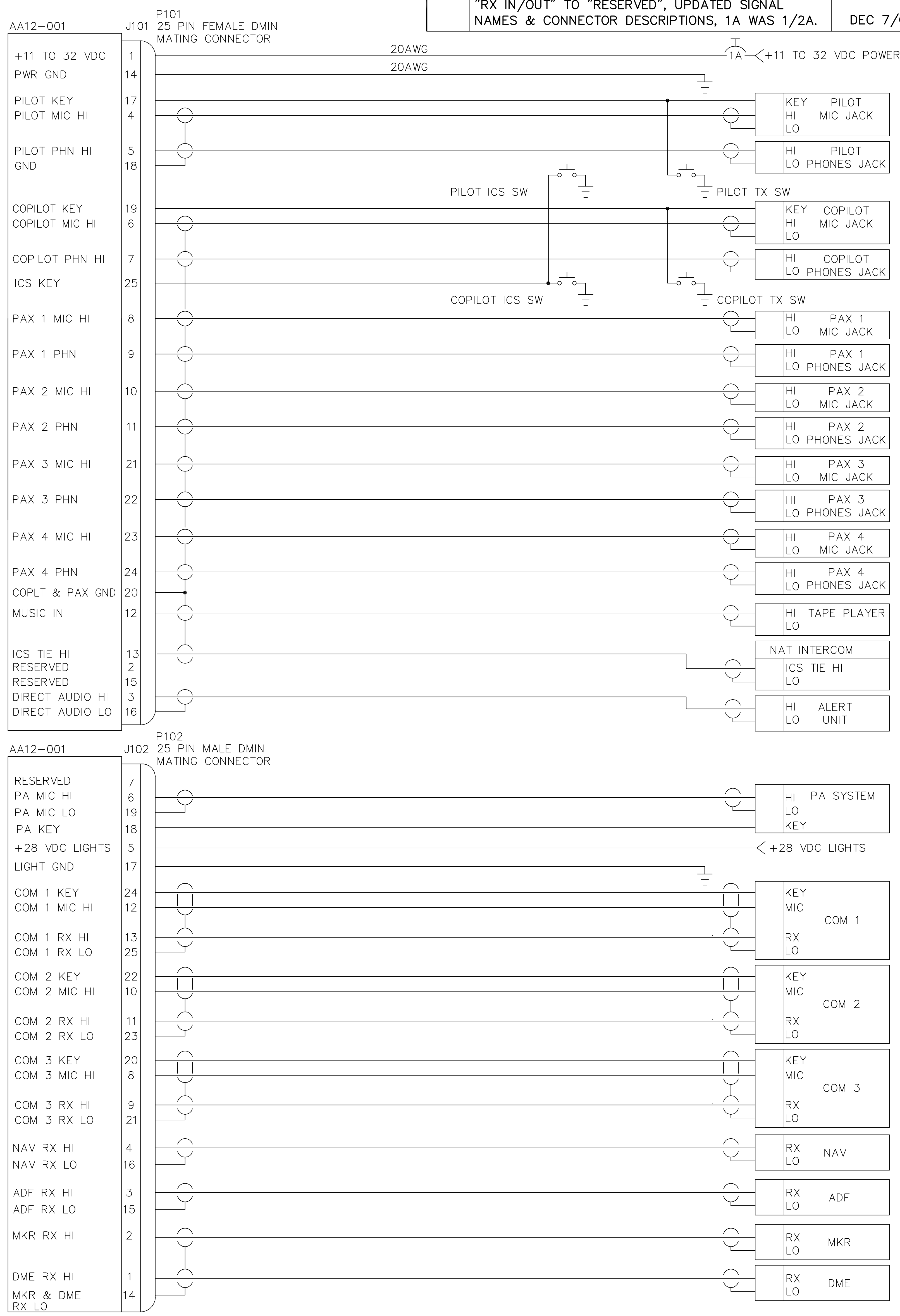
* Use as required.

2.6 Installation Drawings

DRAWING	REV.	DESCRIPTION	TYPE
AA12-001			
AA12\001\403-0	1.10	Compact Audio Controller	Interconnect
AA12\001\405-0	1.12	Compact Audio Controller	Connector Map
AA12\001\905-0	1.12	Compact Audio Controller	Faceplate
AA12\001\922-0	1.10	Compact Audio Controller	Mechanical Installation
AA12-002			
AA12\002\403-0	1.00	Compact Audio Controller	Interconnect
AA12\002\403-1	1.00	Compact Audio Controller	Interconnect
AA12\002\405-0	1.00	Compact Audio Controller	Connector Map
AA12\002\905-0	1.01	Compact Audio Controller	Faceplate
AA12\002\922-0	1.00	Compact Audio Controller	Mechanical Installation
AA12T-002			
Use AA12\002\403-0	1.00	Compact Audio Controller	Interconnect
Use AA12\002\405-0	1.00	Compact Audio Controller	Connector Map
Use AA12\002\905-0	1.01	Compact Audio Controller	Faceplate
Use AA12\001\922-0	1.10	Compact Audio Controller	Mechanical Installation
AA12T\IKC\922-0	1.00	AA12T Tray Assembly	Mechanical Installation

Section 2 ends after these Drawings

REVISIONS			
REV	DESCRIPTION	DATE	BY
1.01	UPDATED PIN DESCRIPTION	JUL 25/95	TM
1.10	ECR #1099 – CHANGED P102 PIN 7 FROM "RX IN/OUT" TO "RESERVED", UPDATED SIGNAL NAMES & CONNECTOR DESCRIPTIONS, 1A WAS 1/2A.	DEC 7/00	TAT



NOTE: ALL WIRES SHOULD BE 22 AWG UNLESS OTHERWISE SPECIFIED. ALL WIRE SHOULD BE IN ACCORDANCE WITH MIL-W-22759. ALL SHIELDED WIRE/CABLE SHOULD BE IN ACCORDANCE WITH MIL-C-27500.

DEFINITIONS:

RESERVED:

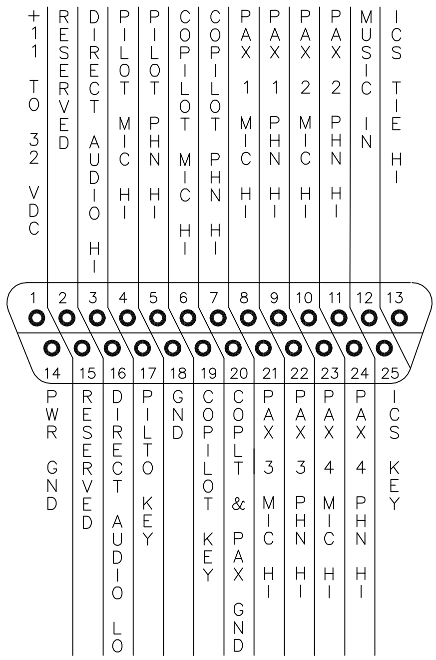
MAY BE CONNECTED AND USED IN FUTURE. THE CIRCUITRY MAY BE PRESENT OR ADDED TO ACTIVATE THE FUNCTION. THE PIN MAY BE USED FOR TEST PURPOSES. THERE IS NO EXTERNAL CONNECTION.

DESIGNED	–	nat NORTHERN AIRBORNE TECHNOLOGY LTD.					
DRAWN	KV/TM						
DATE	JAN 28/95	TITLE	COMPACT AUDIO CONTROLLER				
CHECKED	NAT 114, NAT 113						
APPROVED	NAT 117	SIZE B	CAGE CODE 3AB01	PART NO. AA12-001		REV. 1.10	SHEET 1/1
FILE	403-0110.DWG	DWG. TYPE	INTERCONNECT	DWG. NO.	AA12\001\403-0		

REVISIONS			
REV	DESCRIPTION	DATE	BY
B	–	JAN 18/93	–
1.11	UPDATED PIN DESCRIPTIONS	SEPT 8/95	–
1.12	ECR #1099 – CHANGED P102 PIN 7 FROM "RX IN/OUT" TO "RESERVED", UPDATED SIGNAL NAMES AND CONNECTOR DESCRIPTIONS.	NOV 30/00	TAT/MS

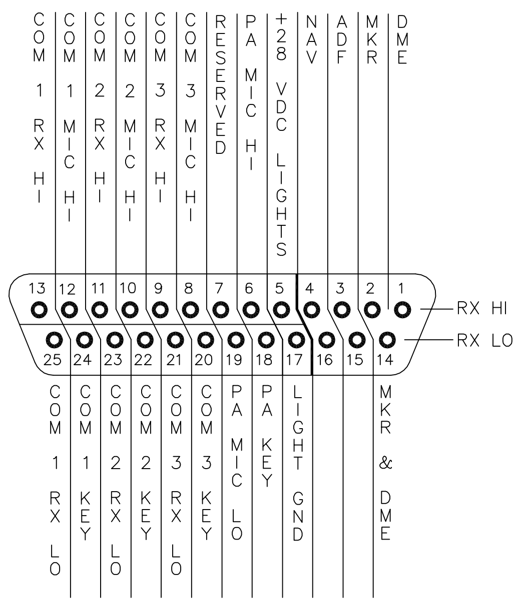
P101

25 PIN FEMALE D-MIN
MATING CONNECTOR



P102

25 PIN MALE D-MIN
MATING CONNECTOR

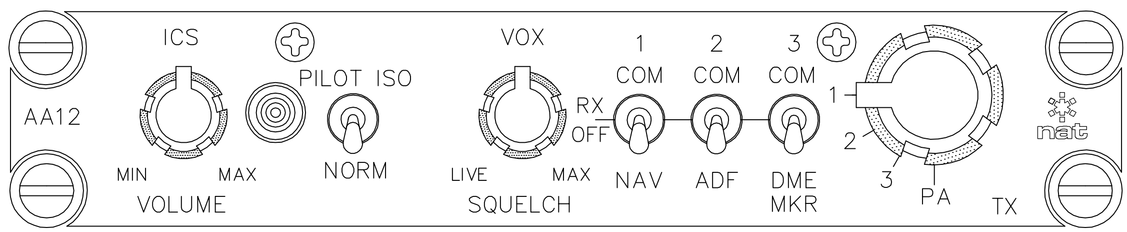


VIEW: REAR OF AIRFRAME CONNECTOR

PROPRIETARY AND CONFIDENTIAL TO NAT LTD.

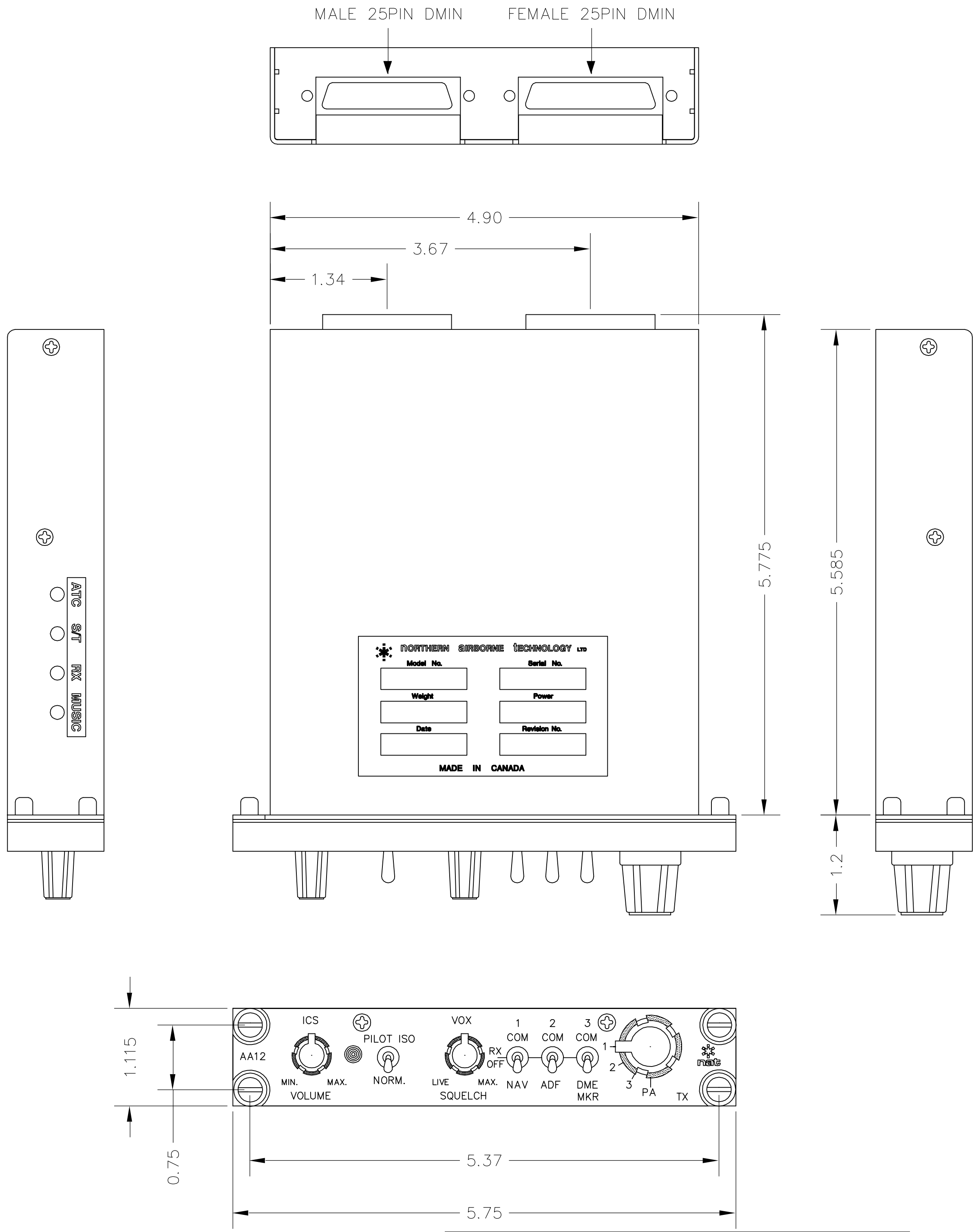
DESIGNED	–	NAT NORTHERN AIRBORNE TECHNOLOGY LTD.				
DRAWN	KV/TM/TB					
DATE	NOV 6/92	TITLE	COMPACT AUDIO CONTROLLER			
CHECKED	NAT 113					
APPROVED	NAT 117	SIZE A	CAGE CODE 3AB01	PART NO. AA12-001	REV. 1.12	SHEET 1/1
FILE	405-0112.DWG	DWG. TYPE	CONNECTOR MAP	DWG. NO.	AA12\001\405-0	

REVISIONS			
REV	DESCRIPTION	DATE	BY
B	DESIGN CHANGES.	JAN 18/93	KV
1.11	FORMAT CHANGES.	JUL 21/95	TM
1.12	ECR #1099 – CORRECTED LENS CAP TO T1–3/4 STYLE, FORMAT CHANGES.	DEC 7/00	TAT



DESIGNED	KV	NORTHERN AIRBORNE TECHNOLOGY LTD.				
DRAWN	KV					
DATE	JAN 15/93	TITLE COMPACT AUDIO CONTROLLER				
CHECKED	NAT 208 NAT 113					
APPROVED	NAT 117	SIZE A	CAGE CODE 3AB01	PART NO. AA12–001	REV. 1.12	SHEET 1/1
FILE	905–0112.DWG	DWG. TYPE FACEPLATE		DWG. NO. AA12\001\905–0		

REVISIONS			
REV	DESCRIPTION	DATE	BY
1.01	ADD PROPER LABELS AND TEXT	JULY 21/95	TM
1.10	ECR #98 0.025 LONGER, SIDE HOLES MOVED	FEB 22/96	MWS



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TOLERANCES UNLESS STATED OTHERWISE 0.X=+/-0.030 0.XX=+/-0.010 0.XXX=+/-0.005 0.XXXX=+/-0.002 ANGLE=+/- 0.5 DEG.	DIMENSIONS IN INCHES THIRD ANGLE PROJECTION	DESIGNED	KV	nat NORTHERN AIRBORNE TECHNOLOGY LTD.			
		DRAWN	KV				
		DATE	MAR 30/93	TITLE	COMPACT AUDIO CONTROLLER		
		CHECKED	NAT PROD. 112				
MATERIAL		APPROVED	NAT 107	SIZE A	CAGE CODE 3AB01	PART NO. AA12-001	REV. 1.10 / SHEET 1/1
FINISH		FILE	922-0110.DWG	DWG. TYPE	MECH. INSTALLATION	DWG. NO.	AA12\001\922-0

AA12–002 INSTALLATION NOTES

NOTES:

1. ALL WIRES SHOULD BE 22 AWG UNLESS OTHERWISE NOTED. USE TEFZEL M27500 OR SPEC44 (M81044) SHIELDED WIRE WITH SOLDER SLEEVES.

2. TO BE USED FOR EXPANSION OF INTERCOM SYSTEM ONLY. REFER TO INSTALLATION MANUAL FOR DETAILS.

DEFINITIONS:

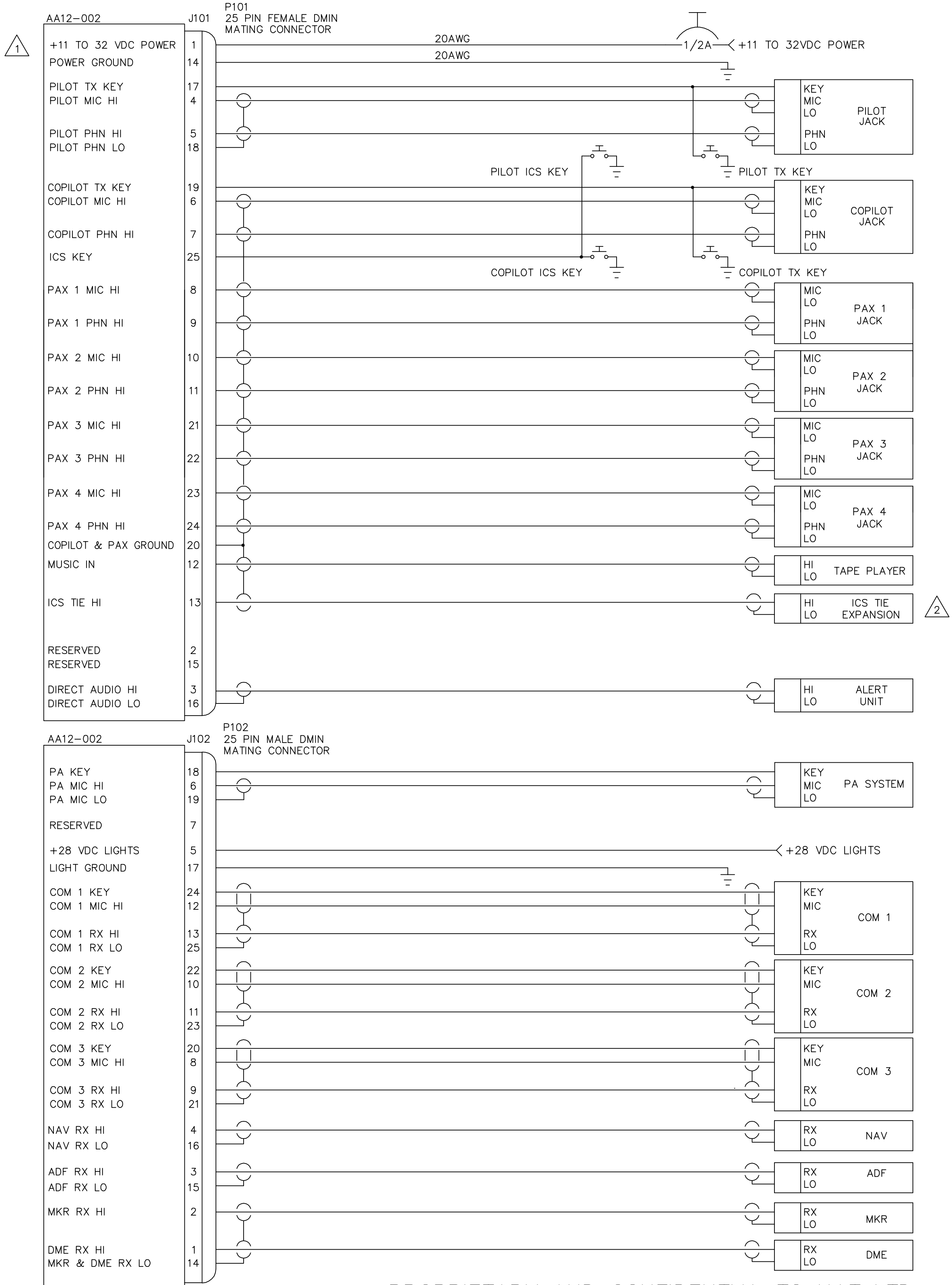
N/C: NO CONNECTION. THE PIN IS NOT CONNECTED TO ANYTHING INTERNALLY, AND THEREFORE SHALL HAVE NO CONNECTION EXTERNALLY.

N/C SPARE: NO CONNECTION INTERNALLY, BUT A SPARE WIRE SHALL BE INSTALLED IN THE WIRE HARNESS.

RESERVED: MAY BE CONNECTED AND USED IN THE FUTURE.
THE CIRCUITRY MAY BE PRESENT OR ADDED TO ACTIVATE THE FUNCTION.
THE PIN MAY BE USED FOR TEST PURPOSES.
THERE IS NO EXTERNAL CONNECTION.

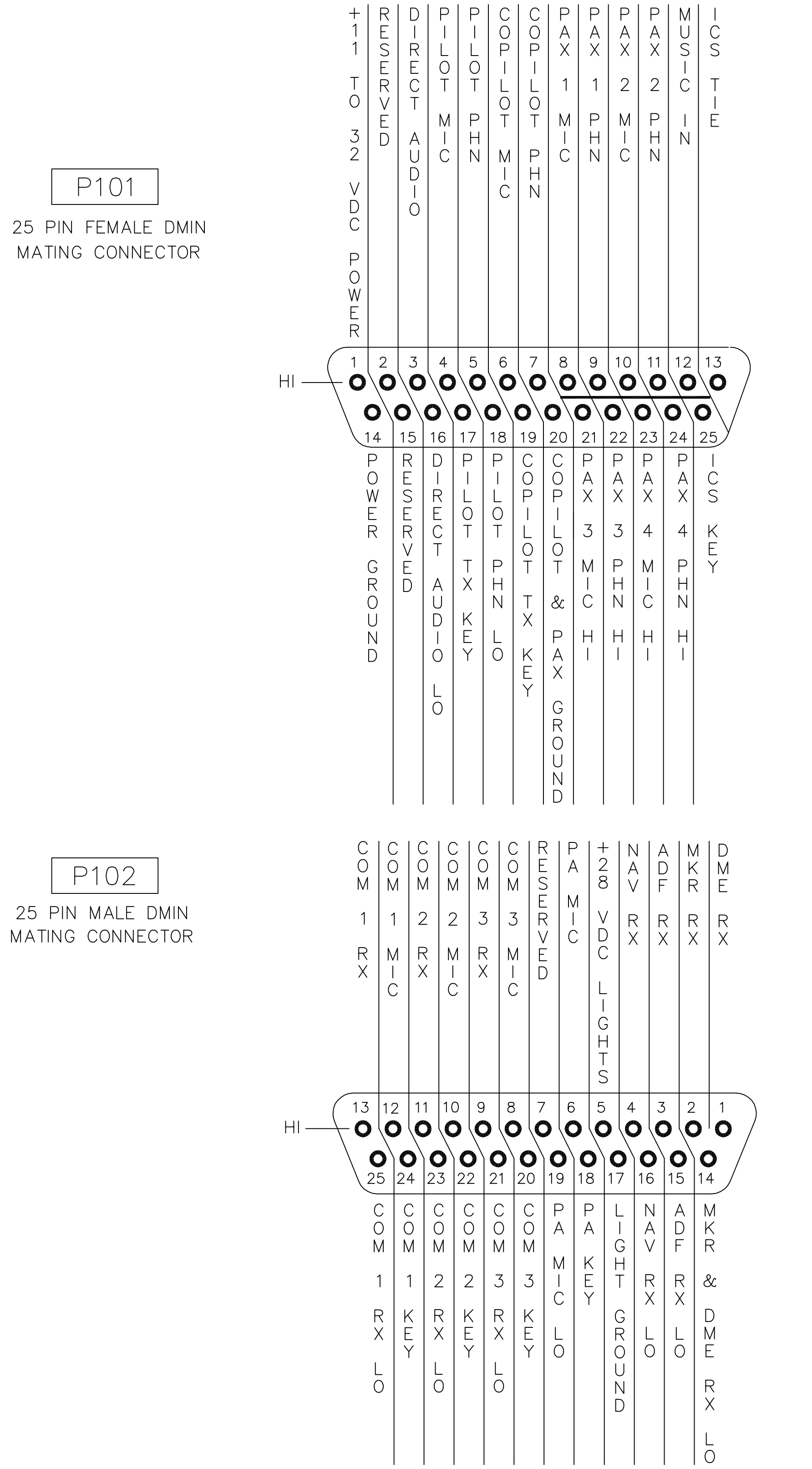
RESERVED SPARE: (RSV SP) RESERVED, BUT INSTRUCTIONS SHALL BE FOLLOWED TO ACTIVATE THE CIRCUITRY. A SPARE WIRE SHALL BE INSTALLED IN THE WIRE HARNESS.

DESIGNED	KV	NORTHERN AIRBORNE TECHNOLOGY LTD.				
DRAWN	TAT					
DATE	AUG 12/99	TITLE: COMPACT AUDIO CONTROLLER				
CHECKED	NAT PROD. 105					
APPROVED	NAT 113	SIZE: A	CAGE CODE: 3AB01	PART NO.: AA12–002	REV.: 1.00	SHEET: 1/2
FILE	403–0100.DWG	DWG. TYPE: INTERCONNECT		DWG. NO.: AA12\002\403–0		



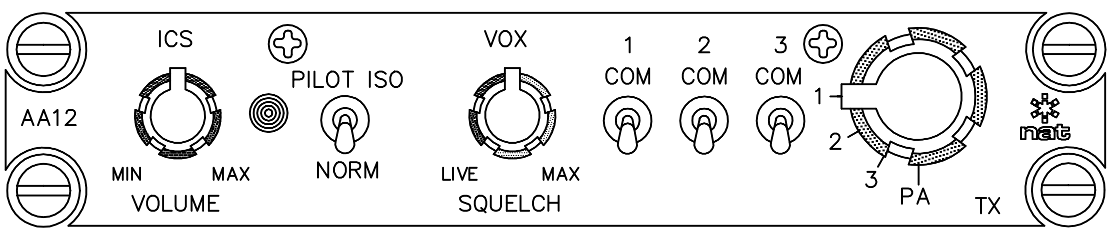
PROPRIETARY AND CONFIDENTIAL TO NAT LTD.

DESIGNED	KV	NAT NORTHERN AIRBORNE TECHNOLOGY LTD.				
DRAWN	TAT					
DATE	AUG 12/99	TITLE: COMPACT AUDIO CONTROLLER				
CHECKED	NAT PROD. 105					
APPROVED	NAT 113	SIZE: A	CAGE CODE: 3AB01	PART NO.: AA12-002	REV.: 1.00	SHEET: 2/2
FILE	403-0100.DWG	DWG. TYPE: INTERCONNECT		DWG. NO.: AA12\002\403-1		



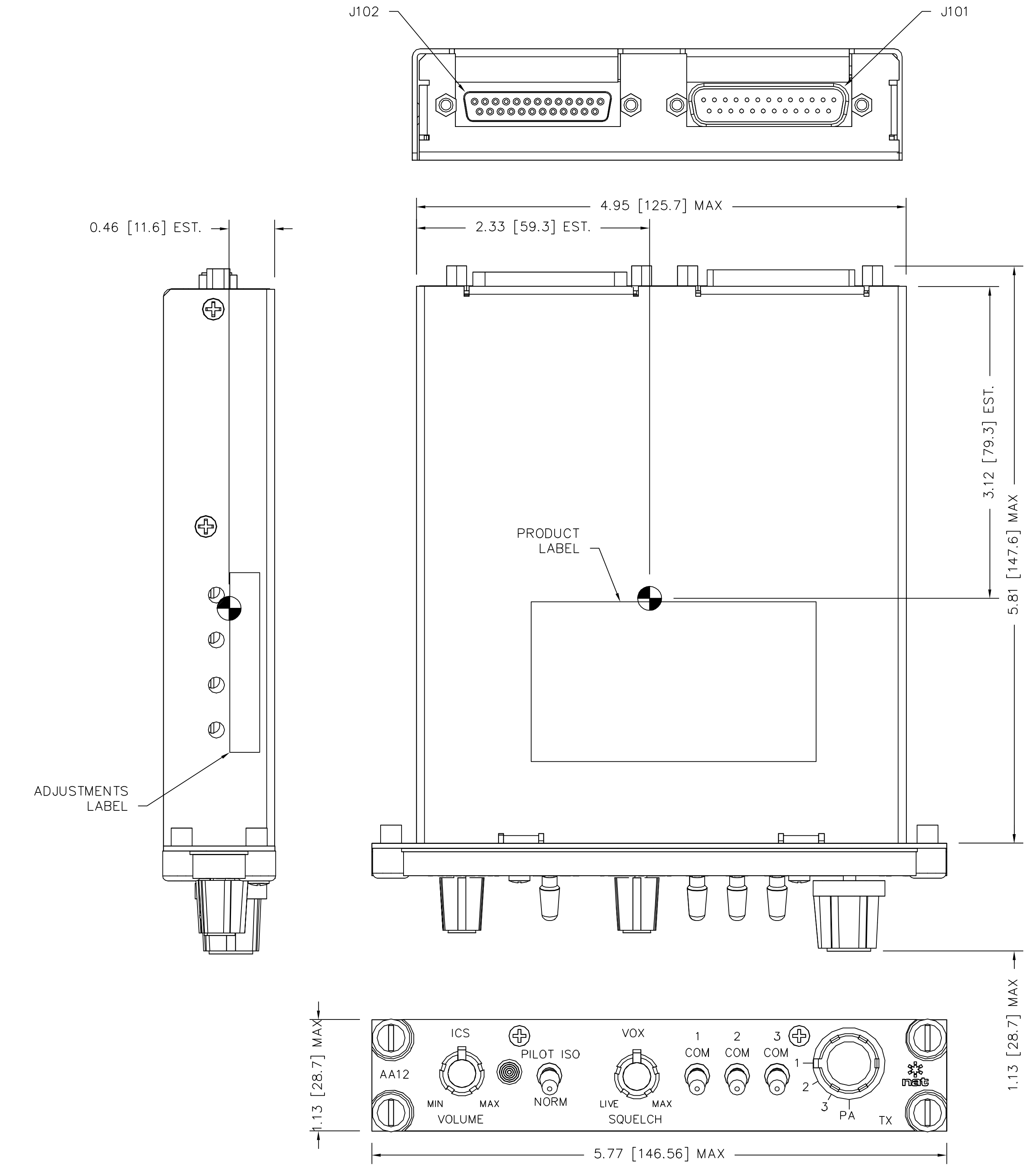
VIEW: REAR OF AIRFRAME CONNECTOR

DESIGNED	KV	nat NORTHERN AIRBORNE TECHNOLOGY LTD.				
DRAWN	TAT					
DATE	AUG 12/99	TITLE: COMPACT AUDIO CONTROLLER				
CHECKED	NAT PROD. 105					
APPROVED	NAT 113	SIZE: A	CAGE CODE: 3AB01	PART NO.: AA12-002	REV.: 1.00	SHEET: 1/1
FILE	405-0100.DWG	DWG. TYPE: CONNECTOR MAP		DWG. NO.: AA12\002\405-0		



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REVISION	DATE	nat NORTHERN AIRBORNE TECHNOLOGY LTD.			
–	JAN 15/93	DESIGNED BY	DESCRIPTION		
1.01	SEP 7/95	–	COMPACT AUDIO CONTROLLER		
		DRAWN BY	PART NUMBER	DRAWING TYPE	SHEET
		M.A.D./P.L.	AA12–002	FACEPLATE	1/1
		APPROVED BY	DRAWING NUMBER	FILE NUMBER	
			AA12\002\905–0	AA12\002\905–0101	

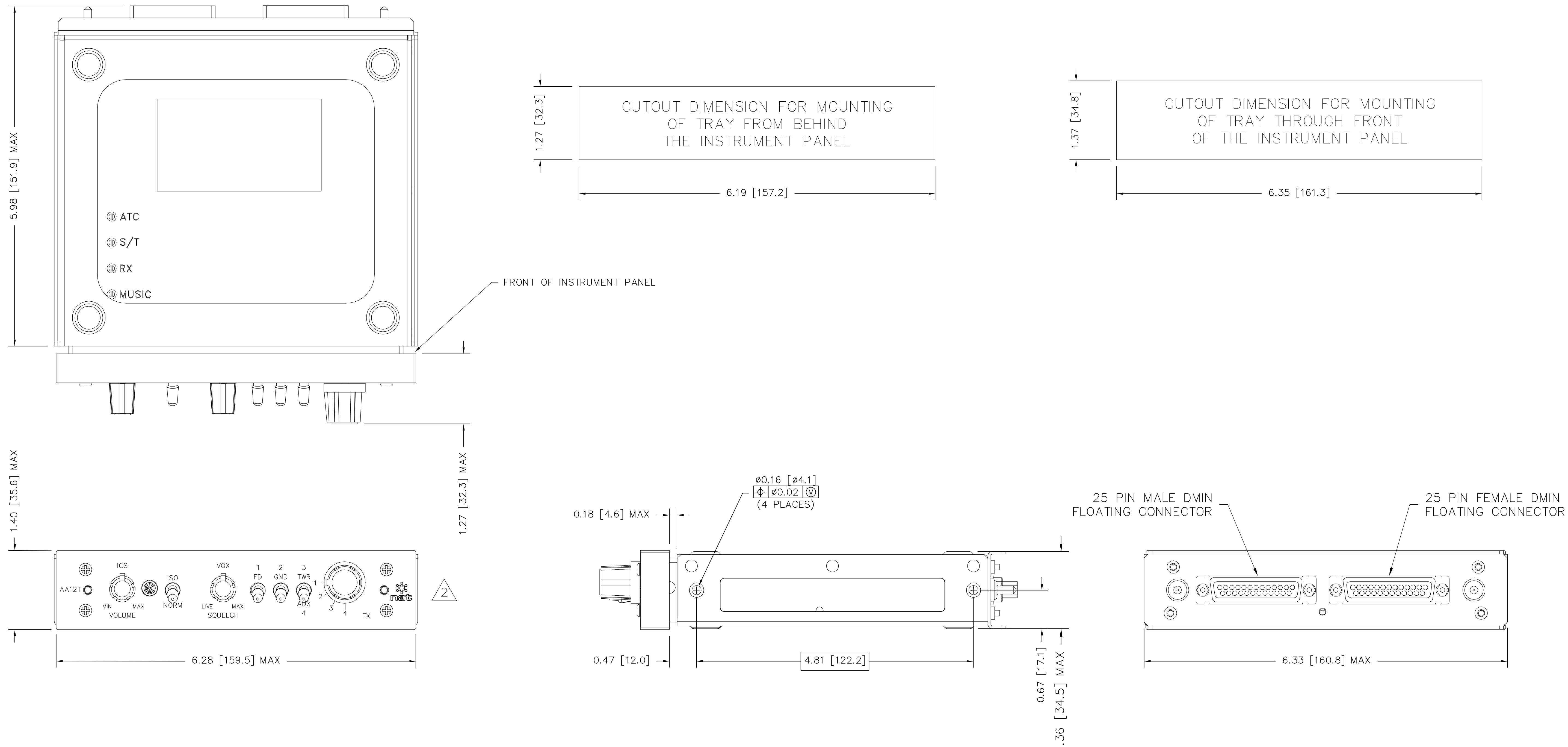


CENTER OF GRAVITY ±0.10" (±2.5mm)

NOTES:
1. DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5M–1994

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DIMENSIONS ARE INCHES [mm]	DESIGNED: KV		nat NORTHERN AIRBORNE TECHNOLOGY LTD.
	DRAWN: TAT		
THIRD ANGLE PROJECTION	DATE: JAN 6/03		TITLE: COMPACT AUDIO CONTROLLER
MASS: 1.10 lbs. (0.5 Kg) MAX	CHECKED: NAT 208, NAT 241		
MATERIAL: –	APPROVED: NAT 114		SIZE: A; CAGE CODE: 3AB01; PART NO.: AA12–002; REV.: 1.00; SHEET: 1/1
FINISH: CHROMATE CONVERSION	FILE: 922–0100.DWG		DWG. TYPE: MECH. INSTALLATION; DWG. NO.: AA12\002\922–0



NOTES:

1. DIMENSIONING AND TOLERANCES IN ACCORDANCE WITH ASME Y14.5M–1994.
2. (△) THE AA12T–LAFD IS SHOWN FOR REFERENCE ONLY. ALL OTHER 'T' AUDIO PANELS WILL USE THIS KIT. REFER TO AA12T–IKC\718–1.
3. THE MASS APPLIES ONLY TO THE TRAY ASSEMBLY. REFER TO THE MECH. INSTALLATION DRAWINGS OF THE SPECIFIC UNITS FOR MORE INFORMATION.

DIMENSIONS ARE INCHES [mm]	DESIGNED	TAB	nat NORTHERN AIRBORNE TECHNOLOGY LTD.	
	DRAWN	TAT		
THIRD ANGLE PROJECTION	DATE	FEB 24/03	TITLE	AA12T TRAY ASSEMBLY
MASS: 0.46 lbs. (0.2 Kg) MAX	CHECKED	NAT 208 / NAT 255		
MATERIAL: 5052 H32 ALUMINUM	APPROVED	NAT 114	SIZE: B / CAGE CODE: 3AB01 / PART NO.: AA12T–IKC	REV.: 1.00 / SHEET: 1/1
FINISH: CHROMATE CONVERSION	FILE	922–0100.DWG	DWG. TYPE: MECH. INSTALLATION	DWG. NO.: AA12T\IKC\922–0

Section 3 Operation

3.1 Introduction

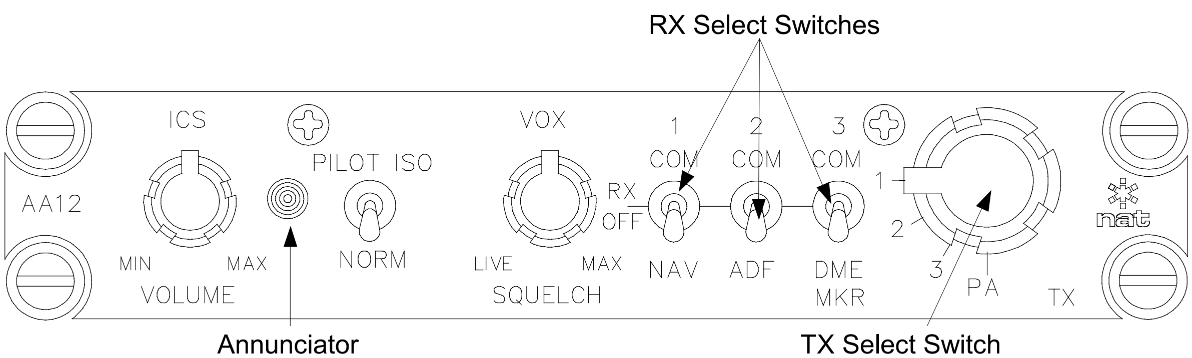
Information in this section consists of the functional and operational procedures for the AA12 Compact Audio Controller, and is applicable to the AA12-001, the AA12-002 and the AA12T-002 unless otherwise noted.

3.2 General

The AA12 is a compact audio controller that provides full boom microphone (MIC) support and high performance audio for up to six crew positions with VOX, LIVE and KEYED ICS capability. Boom MIC control is provided for pilot and copilot transmit capability, with the pilot retaining priority. Muting of the entertainment and/or intercom audio is accomplished during the various operational modes, providing improved intelligibility of the audio delivered to the user.

3.3 Radio Selection

3.3.1 Receive Audio – AA12-001

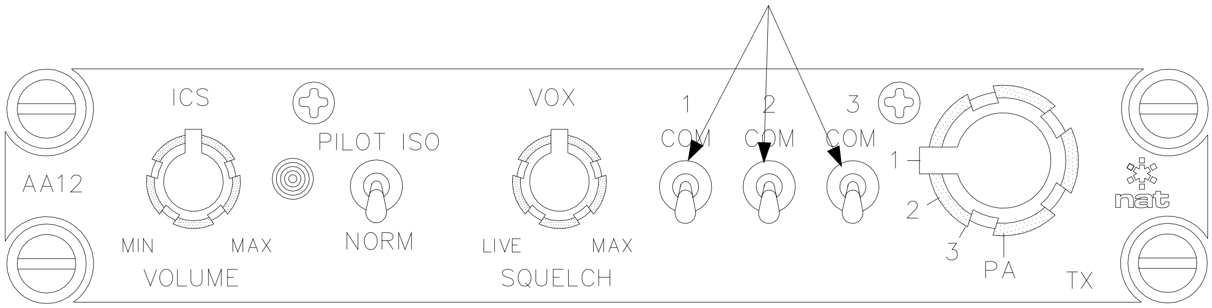


The AA12-001 is typically configured to select the receive (RX) audio from three transceivers and up to four additional receivers. The RX select switches are centre-off toggle switches.

Receiver audio can be selected by setting the applicable RX select switch to the down position, and transceiver audio can be selected by setting the applicable RX select switch to the up position, or as a function of the transmit (TX) select switch. The transceiver that is selected by the TX select switch is automatically selected for receive as well.

An additional Direct Audio input (unswitched) is provided for airframe warning, rad alt, or other high priority audio signal.

3.3.2 Receive Audio – AA12-002/AA12T-002



The AA12-002 is typically configured to select the receive (RX) audio from three transceivers. The RX select switches are two-position toggle switches.

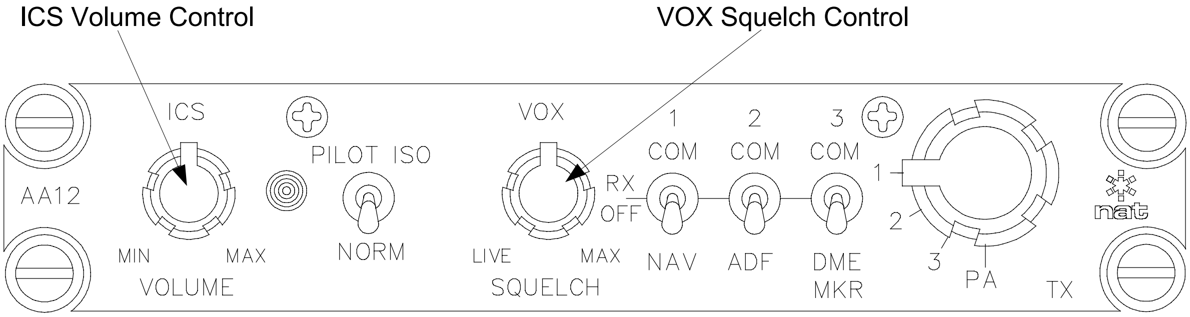
Transceiver audio can be selected by setting the applicable RX select switch to the up position, and deselected (turned off) by setting the applicable RX select switch to the down position. It can also be selected as a function of the transmit (TX) select switch. The transceiver that is selected by the TX select switch is automatically selected for receive as well.

An additional Direct Audio input (unswitched) is provided for airframe warning, rad alt, or other high priority audio signal.

3.3.3 Transmit Selection

The rotary TX select switch provides radio selection for up to three transceivers (**1**, **2**, **3**) and a **PA**. The AA12 is activated for TX operation by selecting the desired transceiver on the rotary TX select switch and pressing the external TX PTT switch. This connects the active MIC to the selected transceiver. The front panel annunciator illuminates green to indicate TX operation.

3.4 Intercom



The AA12 provides three modes of intercom operation, as selected by the position of the VOX Squelch control:

LIVE VOX Squelch positioned fully counter-clockwise (ccw)

VOX VOX Squelch positioned in the active range

MAX (keyed) VOX Squelch positioned fully clockwise (cw)

When the VOX Squelch control is adjusted to the fully ccw direction, the AA12 is in LIVE ICS mode. The front panel annunciator illuminates orange and any sound picked up by the MIC(s) is transferred over the ICS system.

When the VOX Squelch control is adjusted to the fully cw direction, the AA12 is in MAX (keyed) ICS mode. The front panel annunciator remains dark and no sound is picked up by the MIC(s) unless keyed. The MAX (keyed) ICS mode should be used in environments where it is impractical or impossible to use LIVE or VOX modes.

When the VOX Squelch control is adjusted to any position other than fully ccw or fully cw the AA12 is in VOX ICS mode. The annunciator can be used as a guide to properly set the VOX Squelch. To set the VOX Squelch, from the ccw position of the VOX Squelch control, slowly advance the control in a cw direction until the annunciator turns off.

The front panel ICS VOLUME control controls the headset volume for all ICS modes.

Note: ICS is muted during transmit operations.

3.5 Entertainment Audio

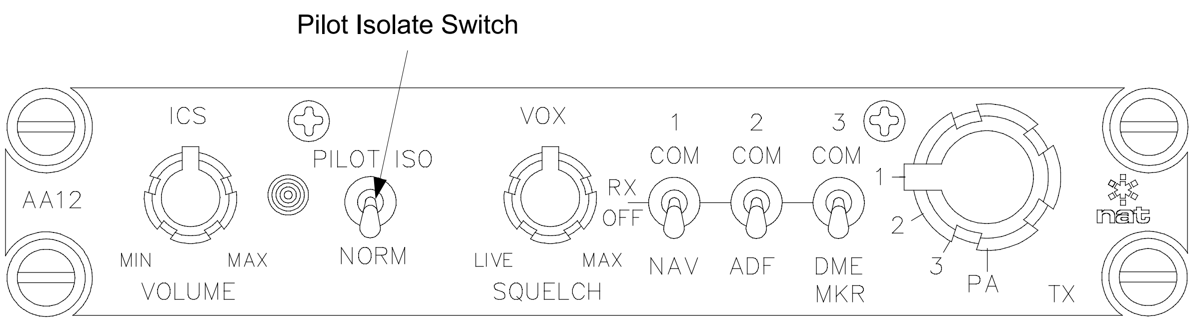
The AA12 has a rear MUSIC input that allows signals from a Walkman or Discman type device to be introduced into the aircraft audio system. This input is muted during transmit functions, when the intercom is active, and during reception of radio audio.

3.6 Pilot Isolate/Emergency Operation

3.6.1 Pilot Isolate

The Pilot Isolate switch is a red, two-position toggle switch. This switch can be set to **NORM** for normal use. However, the AA12 provides split bus operation, allowing the pilot to be removed from the intercom and entertainment channels. By setting the switch to **PILOT ISO**, the pilot is connected directly to the radios, leaving the copilot and passengers to continue to use the intercom and hear entertainment, but not be interrupted by the pilot or any incoming radio traffic. The green annunciator does not illuminate for the pilot transmit operations in the PILOT ISO mode.

Note: In this mode, the copilot's MIC is not locked out and transmission is possible, although incoming radio audio is not received.



3.6.2 Emergency operation

If the AA12 loses power for any reason, it changes to the Power Fail mode and the pilot is connected directly to the radios for EMERGENCY operation. The external TX PTT switch still functions in this mode. This mode is similar to the PILOT ISO mode except that all copilot and passenger functions are lost since they depend on external power.

The front panel annunciator failing to light under any condition indicates a power failure.

CAUTION:
The pilot should confirm that all aspects of EMERGENCY operation are working before accepting the aircraft into service.

End of section 3